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ABSTRACT

From a Vygotskian perspective critical thinking skills are taught through speech interactions between teacher and student. Two assumptions central to Vygotskian theory are the role of inner speech in self-regulation and how teaching creates the zone of proximal development. Inner speech allows humans to consciously direct their thought processes. Critical thinking is a psychological system that involves the collaboration of several higher mental functions including memory, conceptual thought, analysis, synthesis, evaluation, and even imagination. Written texts and peer tutors can be used to teach additional critical thinking skills, but alone they are not sufficient--the teacher-student interaction is the key. The different instructional modes (lecture, the recitation script, Socratic questioning, informal lecture/discussion, open discussion, and independent study) represent different levels of teacher control of learning and are different ways of providing scaffolding in the zone of proximal development. Four stages of learning in the zone of proximal development are conversations with the teacher, private speech, inner speech, and then deautomatization when conversation is again sought out. Vygotsky believed that critical thinking skills are culturally relative and are learned, and used, within a social-historical context. This perspective is a useful way of organizing the disparate lines of research on critical thinking. It also offers interesting strategies for teaching critical thinking which can be evaluated empirically. (One table outlining levels of control in teacher directions is included.) (MG)

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A Vygotskian Perspective on Critical Thinking

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Introduction

From a Vygotskian perspective critical thinking derives from the self-regulatory function of inner speech which is an internalization of previous conversations with the teacher. Two assumptions central to Vygotskian theory are the role of inner speech in self-regulation (1934/1962) and how teaching creates the zone of proximal development (1935/1978).

Contemporary research on the development of inner speech confirms Vygotsky's theory that inner speech is the internalization of spoken conversations (Kohlberg et al 1968; Berk & Garvin, 1984; Berk, 1985; Wertsch, 1979). The general developmental sequence in childhood is as follows: The problem-solving activities of infants and toddlers are at first directed by the spoken instructions of an adult, gradually these spoken instructions are partially internalized with the audible component appearing as the preschool child's private speech, and finally at 7- years of age speech is fully internalized and no longer audible. While inner speech first appears at the mental age of 7- years (Berk, 1985), this same learning sequence repeats throughout the rest of the life span as new tasks are mastered.

According to Vygotsky inner speech allows humans to consciously direct their thought processes. Vygotsky used the term higher mental function to designate a consciously directed thought process. From a Vygotskian perspective critical thinking is a psychological system that involves the collaboration of several higher mental functions including memory, conceptual thought, analysis, synthesis, evaluation, and even imagination.

It is also important to note that when Vygotsky wrote the prehistory of written language in 1928, he introduced the concept that written text is a derivative of spoken language. This has an important implication for teaching. Before writing can be used as a way of teaching critical thinking, the student must have had training in critical thinking during conversations with a teacher.

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The second assumption central to Vygotskian theory is that teaching creates the zone of proximal development. The zone of proximal development is a higher level of performance that an individual can reach in collaboration with a more experienced person. The teacher is more proficient at the type of critical thinking expoused by his discipline and transmits this information through conversation with the learner. A peer tutor may also assist the learner, but it is the teacher who is the model for critical thinking. Collaboration among peers who are at the same level of performance would not result in a gain in critical thinking skills. Also critical thinking skills are socio-cognitive skills and can not be learned through self-discovery.

Instructional Modes

In order to teach critical thinking skills a teacher must be able to scaffold critical thinking in the student's zone of proximal development. An effective teacher is able to scaffold the student's activities by providing additional directions and structuring the task as needed; and then removing supports when they are no longer needed (Wood, 1986; Tharp& Gallimore, 1988). The various modes of instruction advocated by various learning theories can be viewed as different levels of scaffolding of the zone of proximal development. Formal lectures and demonstrations by the teacher represent the highest level of control. The next level is where the teacher drills the student, or calls on the student to recite. The Socratic method of inquiry is also teacher directed but the questions posed by the teacher require the student to use higher levels of reasoning.

The informal lecture/discussion mode is characterized by a loosening of the teacher's control of the class that allows for spontaneity on the part of the student and collaborative problem solving with the teacher. Other opportunities for collaborations occur in laboratory research and artistic works. This collaboration can develop into an apprenticeship.

Non-directive teaching represents the lowest level of teacher control of learning. In such open class discussions and in discovery learning the teacher is only a facilitator or resource. Similarly, in the Piagetian model of education the student learns through self-discovery, or perhaps interactions with peers, but not through interactions with the teacher.

According to Wood,

> ...far more is involved in effective teaching than simply providing material for the child to 'digest' or activating competing ideas that are already implicit in his thinking. We will explore the view that adult and child, working together, can construct new schemes through shared interaction. The potential effects of teaching will prove to be far greater than Piagetian theory allows...(1986, p.195).

These instructional modes can illustrate a developmental sequence through which a learner must pass while moving from novice to apprentice to expert. It is also possible to alternate among these various modes of instruction when teaching. For example, formal lecture can be used to present and structure information that the student might never approach through self- discovery. And at the same time, the student could also be encouraged to initiate his own independent inquiry into some related topic. If the student is unable to pursue an independent project the teacher could function as a consultant for that particular activity as needed.

Four Stages of Learning in the Zone of Proximal Development

Tharp and Gallimore (1988) identify four stages of learning in the zone of proximal development. The first stage is the actual conversation accompanying some physical activity. In the second stage the student regulates his activity through his own private speech which is modeled after conversations with the teacher. In the third stage the self-regulatory speech becomes fully internalized and requires no vocalization. This third stage would be similar to the level at which experts function when they appear to intuitively solve problems. Finally, there is a stage of deautomization where external speech is again necessary because of increases in task complexity or perhaps fatigue. At this point the memory of the teacher's voice may be reactivated, private speech might occur, or an interaction with a teacher sought.

Teachers may go through a similar four stage process when they attempt to teach socio-cognitive skills that have become automatized. Even inner speech can become an unconscious habit and can itself only be consciously regulated by learning how to talk to one's self about inner speech. This is why psychotherapy

techniques frequently require the patient to externalize his inner dialogue in order to become aware of its nature and origins.

Teachers who attempt to teach critical thinking skills may need to meet with colleagues to discuss the type of critical thinking skills that they use regularly in their professions. This would help the teacher develop the metacognitive processes needed to describe critical thinking skills to students.

Levels of Control in the Directions Given by Teachers

Besides examing levels of teacher control as evidenced by instructional mode another level of analysis is important. Wood (1986) identified five levels of maternal control used by mothers when showing their children how to assemble a pyramid out of blocks. These levels of control have parallels in the directives that teachers use when trying to illicit student performance. The five levels of control are verbal prompts, verbal instructions, verbal instructions accompanied by pointing to an object, assembling materials as the learner needs them, and demonstration.

Table 1 lists the five levels of control and gives examples of how the teacher might introduce critical thinking skills at each level. For each level there are three examples: one requiring just a verbal response, one requiring a laboratory experiment, and one from studio art.

For each discipline the type of critical thinking used varies, and thus specific conversational styles have to be identified and incorporated into the curriculum at a level appropriate to the student's needs. In some disciplines critical thinking skills are accompanied by physical manipulation of objects as in laboratory research, technology, or in the fine arts.

In introductory psychology for example, critical thinking skills might fall into four general categories. The first category is information retrievel (that is remembering information and knowing where to find information). Second is logical analysis (being able to analyze an argument); third, being able to do comparisons and contrasts between different theories, and fourth being able to evaluate empirical research. In Western psychology, dialectical thinking which would synthesize opposing theories is not common among psychologists and therefore not expected of students. However, it should be possible to train students to synthesize opposing points of view if that skill is valued.

Table 1: Levels of Control in the Directions Given by Teachers

DIRECTIONS	EXAMPLE
1. General verbal prompts	Discuss the IQ controversy. Do an experiment on operant conditioning. Do a still life oil painting
2. Specific verbal instructions	Discuss the vailidity of the IQ test using the four types of vailidity used to evaluate measurement instruments. Do an experiement in which you [illegible] rat a food pellet everytime he presses a lever. Do an oil painting of a bowl of fruit.
3. Indicates material ((by pointing to an object)	Discuss the vailidity of the IQ test using the four types of validity listed on the blackboard. Do an experiment on operant conditioning following the directions on page 95 in your workbook. Do an oil painting of the bowl of the bowl fruit on the table in front of you.
4. Arrange materials while the works.	Discuss the validity of the IQ test using student the four types of validity used to evaluate measurement instruments. First, name one of the types of validity. That's correct. Does the IQ test have predictive validity? What is it? What's another type of validity? If you don't know, where can you find the answer? Let's look on page 246 in your book. In order to do this experiment, you need a Skinner box. If you look in Cabinet A you'll find one. Let's put it on this counter. Here's some food pellets. You put the food pellet in here. Let's try it out. I'll press the level and you dispense the pellet. That's right. O.K. now put the rat in the box. Hold your paint brush like this, (The teacher positions the paintbrush in the students hand). Make a stroke like this (makes the stroke using the student's

	hand which is holding the paintbrush). Why does this technique work better? Can you tell me?
5. Demonstrates the activity.	The IQ meets the four types of validity in the following ways..... This is how you train a rat to press the lever.... This is how you paint a bowl of fruit.....

Social Context and Critical Thinking Skills

According to Tharp and Gallimore (1988, p. 6) the neo-Vygotskian approach to education is characterized by a renewed interest in social interactions and social context. We have just discussed how social interactions can be used to train critical thinking skills. However, it is important to note that student-teacher interactions do not occur in a social vacuum. Not only are there cross-cultural differences in critical thinking skills, but there are also differences among groups within a culture. This raises an interesting question about how a discipline can accomodate cultural diversity and still train students in the type of critical thinking skills required by the discipline.

Equally important is the educational climate of the school. A school system that does not support the teacher's attempt to teach critical thinking skills is in fact undermining the process. Now that critical thinking has become a fad in higher education some critical thinking programs may unfortunately be nothing more than window dressing. According to Tharp and Gallimore (1988, p. 21-26) the main obstacle to teaching students higher order thought processes is a school administration that uses an authoritarian style. If teachers are not expected to use critical thinking skills at their own institution they can not be expected to transmit these skills to their students. In the words of Tharp and Gallimore (1988, p. 24),

> Sarason and associates (1986) have observed that none of the reformists, commisions, or policymakers have ever dealt directly or meaningfully with these leadership and administrative features of the school culture - this in spite of the fact that the school culture systematically assumes incompetence on the part of the teacher and, through paternalistic authoritarianism, ultimately makes not only the teachers but also the schools themselves incompetent for teaching (Sizer, 1984). It is the ossified administrative/

> orgainzational structures of the schools themselves that perpetuate the infantilization and unprofessionalism of the American teacher, because the schools will not allow teachers to become professional. This state of affairs is now marching blindly and triumphantly into its third century.

According to Tharpe and Gallimore most instruction follows a recitation script in which the teacher presents information and then drills the student. The recitation script in the classroom has a parallel in the way in which teachers interact with administrators.

In the words of Tharp and Gallimore,

> ...it should be noted that the practice of supervision in schools is largely this: to assess, to direct, and otherwise to ignore. *The administrative practice of assessing and directing is organically related to the classroom practice of assessing and directing recitation script.* At neither level is there sufficient responsiveness, joint productive activity, or the building of common meanings and values. Teachers have virtually no interaction with their supervisors: when they do, they are expected to "recite," be assessed, and receive directions. Earlier in this chapter, we wondered at the vitality of the recitation script, which, like some ineradicable classroom mold, has lived long and done nothing. We should wonder no longer. In schools, it is everywhere - in the classroom, in the boardroom, and in the principal's office (Tharp and Gallimore, 1988, p. 25-2) [italics and quotes in the original text]

Thus from a Vygotskian perspective critical thinking skills are culturally relative and are learned, and used, within a social-historical context. Critical thinking programs will have no real success unless the educational climate of the school supports critical thinking at all levels including students, staff, and administration.

Conclusion

In conclusion, from a Vygotskian perspective critical thinking skills are taught through speech interactions with a teacher. Written texts can be used to teach additional critical thinking skills, but texts alone are not sufficient. Similarly having students write will not result in a gain in critical thinking unless the writings are also discussed. Peer tutors can help to scaffold the learning experience but they are not a substitute for teacher assisted learning.

The different instructional modes (lecture, the recitation script, Socratic questioning, informal lecture/discussion, open discussion, and independent study) represent different levels of teacher control of learning and are different ways of providing scaffolding in the zone of proximal development. An efficient teacher

provides more structure and direction as the student needs it, and removes these supports when they are no longer needed.

Four stages of learning in the zone of proximal development are conversations with the teacher, private speech, inner speech, and then deautomatization when conversation is again sought out (from Tharp and Gallimore, 1988). Both teachers and students would benefit from being aware of this process. For example, slow learners may need to spend more time in stage one or two. Or a slow learner may not progress through these stages at the same rate as other students.

Another type of analysis that can be done is to identify the level of control that a teacher uses when giving directions to a student. These levels range from verbal prompts to actual demonstrations. Each discipline requires different critical thinking skills. By identifying the way in which these skills are directed at each level, a teacher could more easily increase or decrease the amount of control to suite the student's needs.

The last consideration is the social context in which the critical thinking skills are being taught. One consideration is the cultural diversity of students. The other is the educational climate of the school. An individual who is able to analyze, synthesize, and evaluate information can make important contributions to society. However, it would be naive to think that all social groups in fact want their members to be critical thinkers.

Besides the cognitive domain, which has been discussed here, there is also an affective domain involved in teaching critical thinking. A review of the research literature on critical thinking shows that the emotional and moral aspects of critical thinking have been overlooked. Specifically, being able to think for yourself, and not blindly accept the opinions of others, requires self-confidence and at times even courage.

The relationship between critical thinking and creativity also needs to be investigated. From a Vygotskian perspective adult creativity involves the collaboration of fantasy and critical thinking skills, such as analysis and evaluation. Creative imagination would thus be a higher developmental level than critical thinking (see Smolucha & Smolucha, 1986 a, b; Smolucha, 1988).

The Vygotskian perspective on critical thinking is a useful way of organizing the disparate lines of research on critical thinking. It also offers interesting strategies for teaching critical thinking which can be evaluated empirically.

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